

(12) UK Patent Application (19) GB (11) 2 335 962 (13) A

(43) Date of A Publication 06.10.1999

(21) Application No 9807027.9

(22) Date of Filing 01.04.1998

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(51) INT CL⁶
F16B 23/00

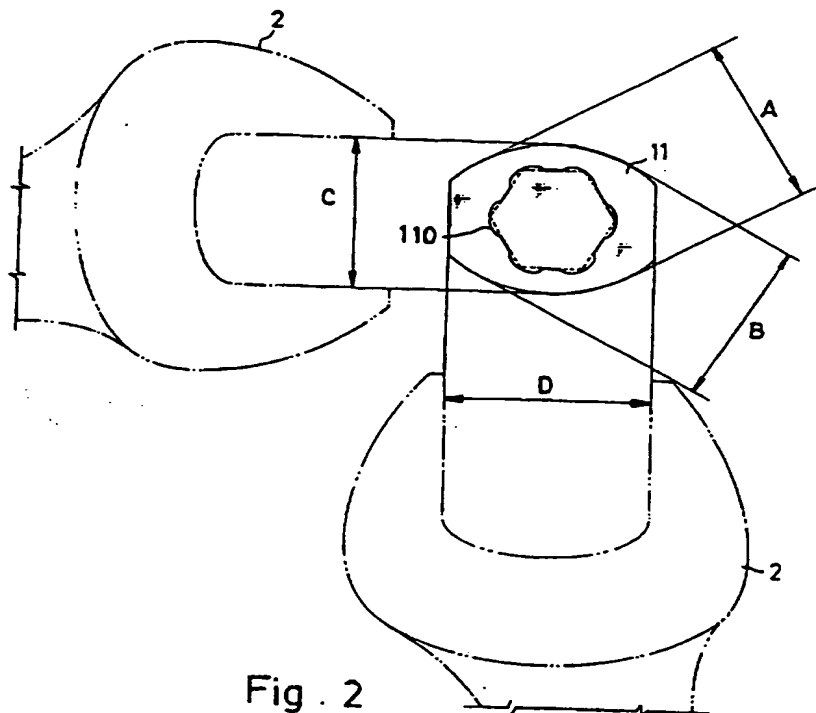
(52) UK CL (Edition Q)
F2H HFA H21 H22

(56) Documents Cited
US 5674036 A

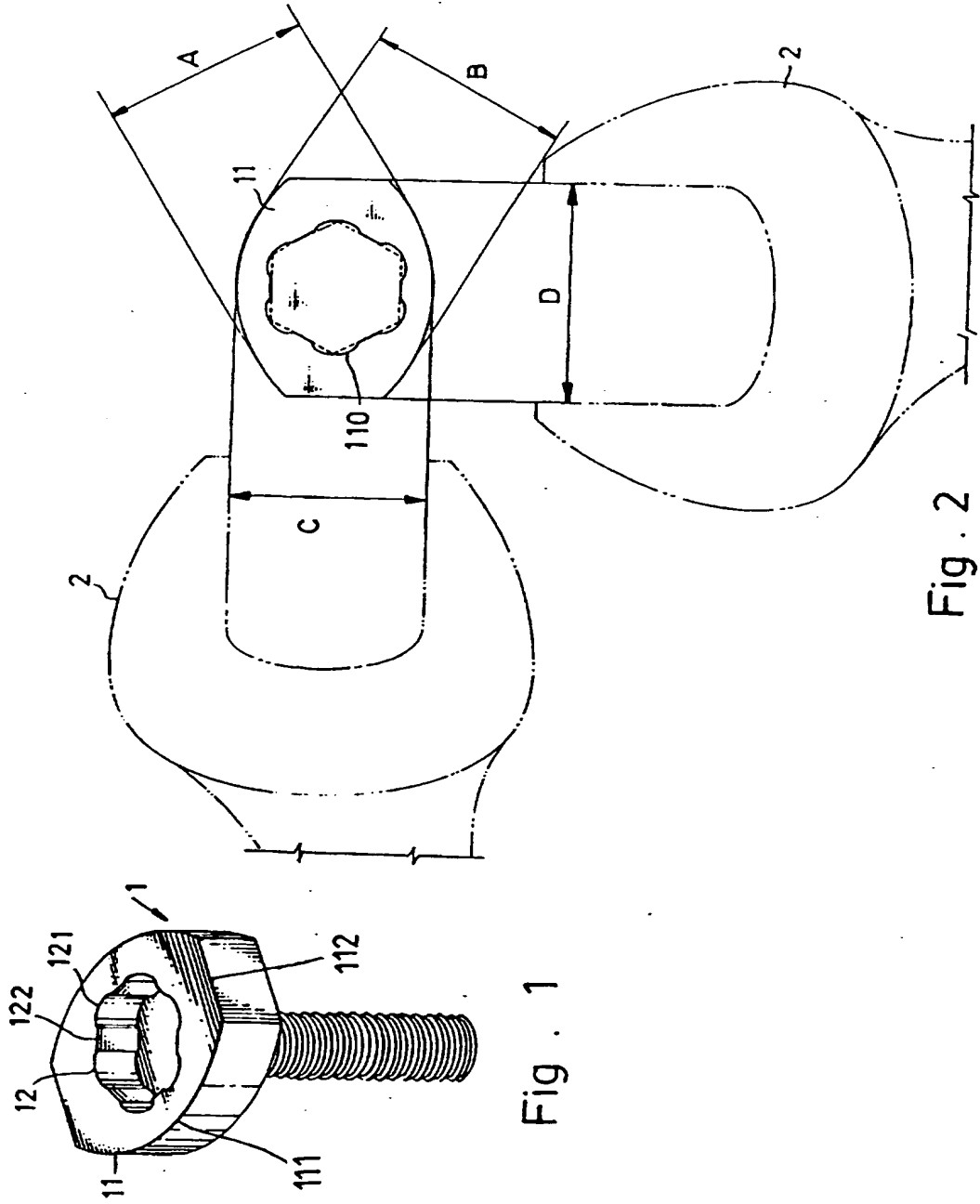
(58) Field of Search
UK CL (Edition Q) F2H
INT CL⁶ F16B 23/00

(54) Abstract Title
Screw drive head

(57) A screw (1, Fig 1) has an oval shaped drive head 11 with smoothly curved wall portions (111) and flat side wall portions (112) alternatively arranged for turning by open-end spanners 2 of different sizes. The drive head 11 has a tool slot (12) comprising six flat walls (122) separated by six convex walls relative to the centre of the head 11 linking the flat walls (122). The slot (12) is suitable for engagement either with a grooved or plain hexagonal driver (see Figs 7 and 8).



GB 2 335 962 A



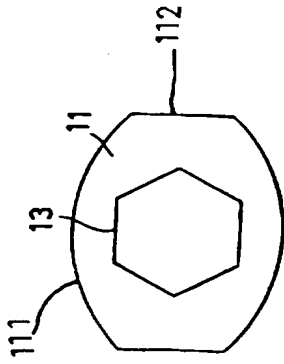


Fig . 4

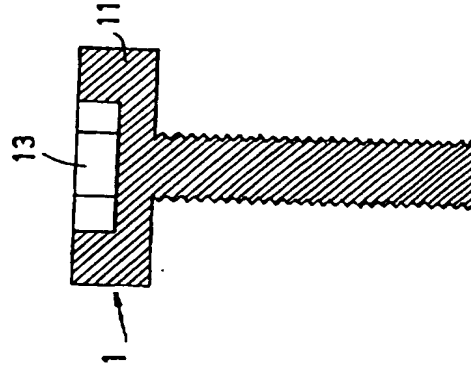


Fig . 5

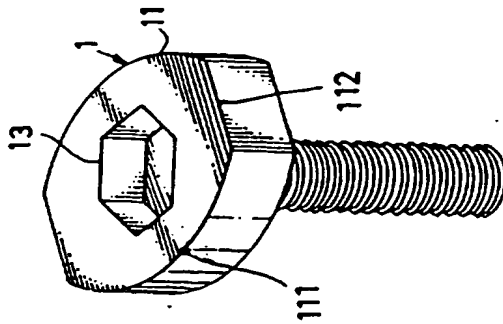


Fig . 3

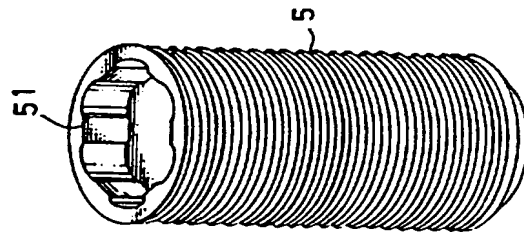


Fig . 6

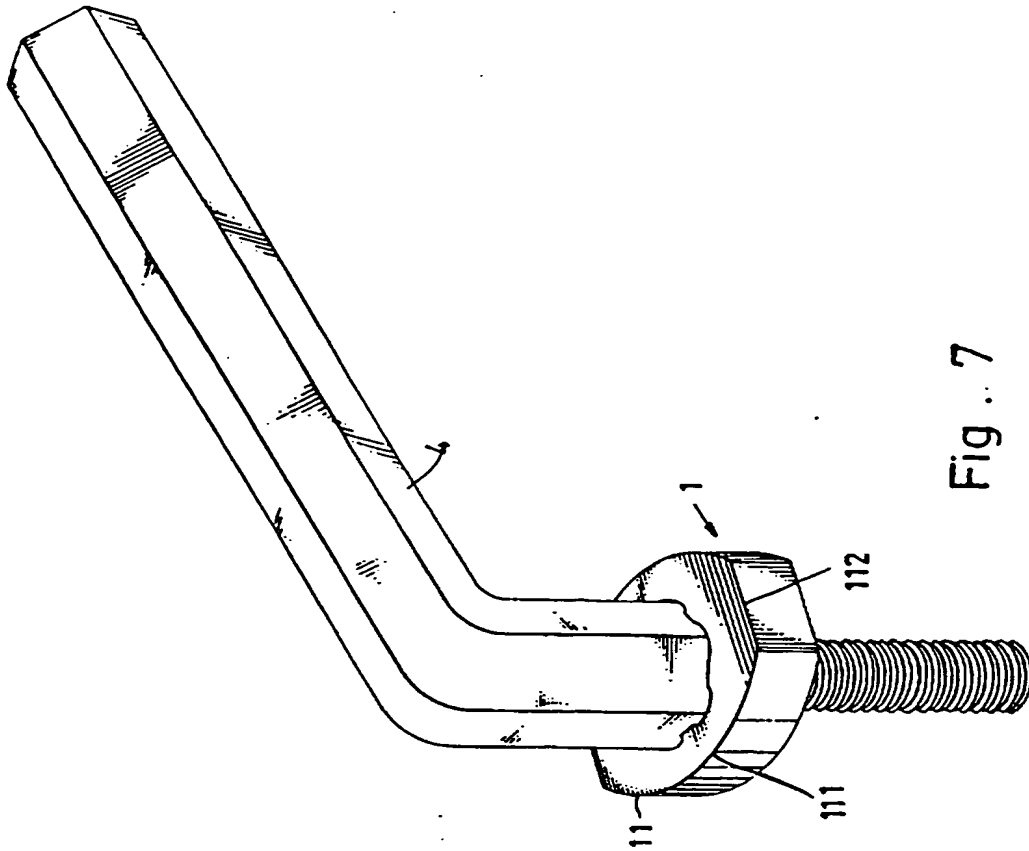


Fig. 7

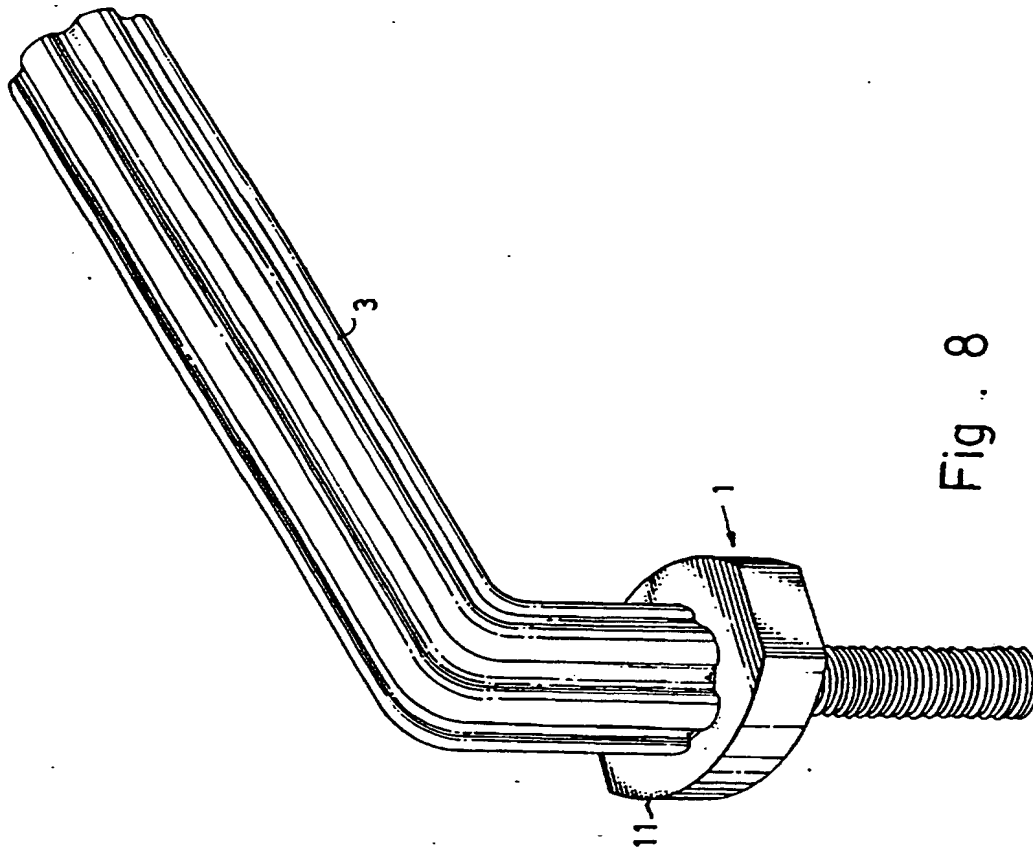


Fig. 8

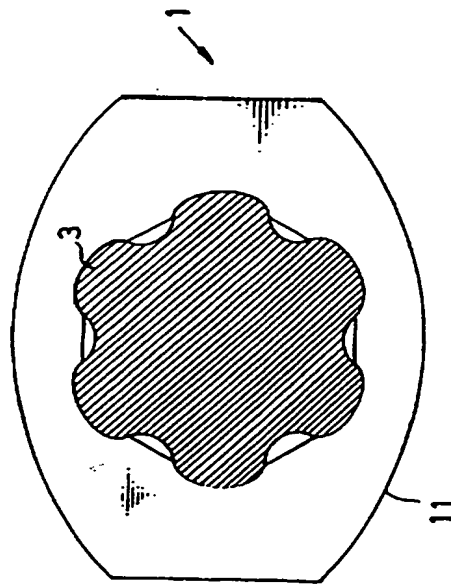


Fig. 9

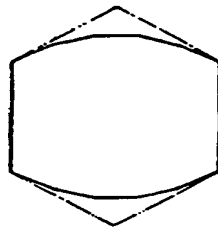


Fig · 10

SCREW

This invention relates to a screw.

The invention concerns a screw with an oval head adapted for turning by different open-end wrenches, and
5 with a tool slot in the upper surface of its head adapted for turning by a hex wrench or an Allen wrench.

On a large scale, screws are being used instead of
nails, to fasten things together. A screw may have a
10 head for easy turning by an open-end wrench, with a tool slot in the upper surface of the head adapted for turning by a screwdriver, grooved wrench, hex wrench, or socket wrench. However, the tool slots of regular screws are designed to be adapted for turning by a
15 particular tool of a particular size only. Therefore, when to turn a particular screw, one shall have to find a particular tool of a particular size from different tools of different sizes for turning the screw.

20 It is the major object of the present invention to provide a screw which is designed for turning by any of a variety of tools of different sizes. According to one aspect of the present invention, the tool slot of the screw is defined by a plurality of circularly arched
25 upright grooves and a plurality of flat upright wall portions, which are alternatively arranged around the border of the tool slot for permitting a hex wrench and an grooved wrench to be alternatively fitted into the tool slot and driven to turn the screw. Accordingly to
30 another aspect of the present invention, the head of the screw is made of oval shape having smoothly curved side wall portions and flat side wall portions alternatively arranged together and adapted for turning

by open-end wrenches of different sizes.

An embodiment of the present invention will now be described by way of example with reference to the
5 accompanying drawings, in which:

Figure 1 is an elevational view of a screw according to the present invention;

10 Figure 2 is a schematic drawing showing different open-end wrenches attached to the head of the screw in different directions according to the present invention;

Figure 3 is an elevational view of alternate form
15 of the screw according to the present invention, showing a hexagonal tool slot made in the upper surface of the head of the screw;

Figure 4 is a top plain view of the head of the
20 screw shown in Figure 3;

Figure 5 is a side view in section of the screw shown in Figure 3;

25 Figure 6 shows another alternate form of the screw according to the present invention;

Figure 7 shows a hex wrench attached to the tool
slot of the screw shown in Figure 1.
30

Figure 8 shows an grooved wrench attached to the tool slot of the screw shown in Figure 1;

Figure 9 is a cross section taken on a part of
35 Figure 8, showing the grooved wrench fitted into the

tool slot; and

Figure 10 shows an alternate arrangement of the head of the screw according to the present invention;

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Referring to the various drawings attached herewith, a detailed description of the structural features of a screw of the present invention is as follows:-

10

Referring to Figures 1 and 2, the screw, referenced by 1, has an oval-like head 11 adapted for turning by any of a variety of open-end wrenches 2 of different specifications. The oval-like head 11 has smoothly curved side wall portions 111 and flat side wall portions 112 alternatively arranged together to fit the open ends of open-end wrenches 2 of different sizes. Figure 2 shows four open-end wrenches 2 of different sizes A, B, C, and D used for turning the oval-like head 11 of the screw 1. A tool slot 12 is made in the upper surface of the oval-like head 11. The tool slot 12 comprises a plurality of circularly arched upright grooves 121 and a plurality of flat upright wall portions 122 alternatively arranged around the border. Therefore, a hex wrench 4 (see Figure 7) or grooved wrench 3 (see Figures 8 and 9) can be fitted into the tool slot 12 to turn the screw 1.

Figures 3, 4, and 5 show an alternate form of the present invention, in which a hexagonal screwdriver slot 13 is made in the upper surface of the oval-like head 11 for turning by a socket wrench.

As an another alternate form of the present invention, as shown in Figure 10, the head of the screw

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may be made of polygonal profile.

Figure 6 shows still another alternate form of the present invention, in which the screw is developed as a countersunk screw 5 having a tool slot 51 in one end thereof for turning by a hex wrench or a grooved wrench.

It is to be understood that the drawings are designed for purposes of illustration only, and are not intended as a definition of the limits and scope of the invention disclosed.

CLAIMS:-

1. A screw comprising a head having a flat top with a center and solid sides transversely extending downward relative to said top, said sides including first, second, third and fourth sides; said first side
5 opposing said third side, said second side opposing said fourth side, said first and third sides are symmetrical about said center of said top; said second and said fourth sides are equal in length, parallel and rectangular-shaped flat walls; said first side having a
10 peripheral shape of a partial circle when viewed from said top and a radius of said partial circle is longer than said length of said second and fourth sides; said first, second, third and fourth sides arranged to cooperate with open-end wrenches for at least three
15 different sized nuts for turning said screw.

2. The screw of claim 1, further including a tool slot arranged at said center of said top, said tool slot including a plurality of sides extending downward
20 relative to said top, said plurality of sides including six rectangular-shaped flat walls arranged in a hexagonal pattern when viewed from said top, and six convex walls relative to said center arranged at corners of said hexagonal pattern when viewed from said
25 top.

3. A screw comprising a head having a flat top with a center and a tool slot arranged at said center of said top, said tool slot including a plurality of
30 said transversely extending downward relative to said top, said plurality of sides including six rectangular-shaped flat walls arranged in a hexagonal pattern when viewed from said top, and six convex walls relative to said center arranged at corners of said
25 hexagonal pattern when viewed from said top.

4. A screw substantially as hereinbefore described with reference to, and as illustrated in, Figs. 1, 7, 8 and 9; or Figs. 3, 4 and 5; or Fig. 6; or Fig. 10 of the accompanying drawings.



Application No: GB 9807027.9
Claims searched: 1-4

Examiner: Robert H Games
Date of search: 24 March 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): F2H

Int Cl (Ed.6): F16B 23/00

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	US 5674036 (CHIH-CHING) see whole document	1-4

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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